This application has been reviewed in light of the Office Action dated March 18, 2003. Claims 1-51 remain in this application. Claims 8, 9, 13, 15, 16, 33, 35, 36, 40, 42 and 43 have been amended as to matters of form. Claims 1, 10, 20, 21, 28, 37 and 47-49 are in independent form. Favorable reconsideration is requested.

The specification has been amended as to the matter of form kindly pointed out by the Examiner

Applicants note with appreciation the indication that Claims 6 and 7 would be allowable if rewritten so as not to depend from a rejected claim, and with no change in scope. Those claims have not been so rewritten because, for the reasons given below, their base claim is believed to be allowable.

Claims 1-5 and 8-51 were rejected under 35 U.S.C. § 103(a) as being obvious from U.S. Patent 6,229,926 (Chui et al.) in view of U.S. Patent 5,600,373 (Chui et al.).

Chui '926 relates generally to the processing and storage of images in digital cameras and other devices, and particularly to a system and method for applying a wavelet or wavelet-like transform to a picture using a transform tile size that is much smaller than the picture and using much less working memory than would be required if the transform were applied to the entire picture at once (col. 1, lines 8-15).

The *Chui '926* system tiles a captured image, processing the tiles in a predefined order (col. 2, lines 16-17). After each tile of the raw image has been transformed into wavelet coefficients, the resulting array of wavelet coefficients are compressed and encoded (col. 5, lines 22-24). All the tiles in the image are processed, in

raster-scan order by applying a wavelet-like decomposition transform to them in both the horizontal and vertical directions, then quantizing the resultant transform coefficients, and finally by encoding the quantized transform coefficients (col. 9, lines 34-38). Finally, after all the tiles in the image have been processed, an image file containing all the encoded tiles is stored in non-volatile memory (col. 9, lines 41-43). It is therefore apparent that the *Chui '926* system completely transforms the image tiles, <u>after which</u> the tile coefficients are quantized and encoded.

In contrast, as set forth in independent Claim 1 of the present application, a significantly different process is adopted. Claim 1 recites, among other features, the features of *b) selecting a current tile; c) decomposing the current tile using the DWT to at least one level of decomposition to form a plurality of subbands including a LL, LH, HL and HH subband; d) accumulating coefficients in each subband of the LH, HL and HH subbands to form blocks of the specified size, and encoding each block to a bit stream.* According to the aforementioned features, and having regard to a current tile, the tile is decomposed using the DWT to form a plurality of subbands of which coefficients are accumulated for the LH, HL and HH subbands to form blocks of the specified size at a given decomposition level. These blocks, at the decomposition level then attained, are encoded to a bit stream.

Claim 1 also recites, among other features, *e) accumulating LL subband coefficients and repeating steps b) to e) until a predetermined number of coefficients of the LL subband have been accumulated.* In this step the LL subband coefficients are accumulated, and steps (b) to (e) are repeated, until a predetermined number of coefficients of the LL subband have been accumulated. It is accordingly apparent that the process

- 23 -

recited in steps (a) to (h) of Claim 1 involves continuous encoding of LH, HL and HH coefficients to the bit stream, on a per-block basis as each decomposition level is attained, as the tile in question is progressively decomposed into blocks of a specified size using the DWT. This is a quite different process to that set out in *Chui '926*, in which only after each tile has been completely transformed into wavelet coefficients at the desired depth of decomposition, is the resultant array of wavelet coefficients compressed and encoded (col. 5, lines 22-25).

The Office Action concedes that *Chui '926* fails to provide an explicit teaching of the features recited in step (d) of Claim 1, and cites *Chui '373* to supply what is missing from *Chui '926* in this regard. *Chui '373* relates to a system that calculates "a numerical value based upon the sum of the coefficients in the LH, HL and HH components of the decomposed image" (col. 26, lines 54-55). However, the purpose of this calculation is to determine a compression ratio in order to determine whether "an additional pass through the decomposition process [needs to be] performed" (col. 26, lines 48-50). Furthermore, *Chui '373* calculates a numerical value based upon the **sum** of the coefficients, whereas step (d) of Claim 1 of the present application recites *accumulating coefficients ... to form blocks ... and encoding each said block to a bitstream*. The term "*accumulating*" in Claim 1 means to collect or gather the coefficients so that the coefficients can be encoded to the bit stream in blocks. Applicants submit that nothing has been found, or pointed out, in *Chui '373* that would teach or suggest such a procedure.

The Office Action states that it would have obvious to one of ordinary skill in the art at the time the present invention was made to incorporate such "accumulating" as is allegedly taught by *Chui '373* in combination with *Chui '926* because doing so would

have allowed a desired compression ratio to be achieved, as allegedly suggested by *Chui '373* at col. 26, lines 25-30. However, as noted, the addition in *Chui '373* is different from, and does not suggest, *"accumulation"*, which is what is recited in Claim 1. Furthermore, it should be noted that the *"accumulation"* of Claim 1 facilitates gathering of the coefficients into blocks, and encoding of the coefficients to a bitstream. In contrast, the addition in the *Chui '373* system relates to calculation of a compression ratio to determine whether an additional pass through the decompression process needs to be performed (col. 26, lines 49-50).

In summary, at least the noted features of Claim 1 are neither taught nor suggested by *Chui '926* or *Chui '373*, whether taken separately or in any permissible combination. Furthermore, even if *Chui '926* discloses decomposition of complete tiles to a desired level of decomposition **prior** to tile encoding, this is not believed to suggest doing so after encoding, and thus considerable modification of *Chui '926* would be required even after incorporation of the addition from *Chui '373* before one would arrive at the partial tile decomposition/encoding approach as recited in Claim 1.

It is thus submitted that Claim 1 is patentable over *Chui '926* and *Chui '373*, whether taken individually or in combination.

All the other independent claims are similar to Claim 1 in respect of the arguments presented above, and recite features whereby LH, HL and HH blocks at a particular level of decomposition are encoded to a bitstream as they are formed, this distinguishing the claims and rendering them patentable in light of the cited prior art. Accordingly, each of the independent claims is believed to be allowable over the art cited against them for substantially the same reasons as is Claim 1.
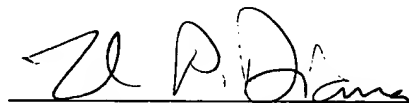
A review of the other art of record has failed to reveal anything which, in Applicant's opinion, would remedy the deficiencies of the art discussed above, as references against the independent claims herein. Those claims are therefore believed patentable over the art of record.

The other claims in this application are each dependent from one or another of the independent claims discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicant respectfully requests favorable reconsideration and early passage to issue of the present application.

Applicant's undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

Attorney for Applicant
Leonard P. Diana
Registration No. 29,296

FITZPATRICK, CELLA, HARPER & SCINTO
30 Rockefeller Plaza
New York, New York 10112-3801
Facsimile: (212) 218-2200

NY_MAIN 363485 v1

- 26 -